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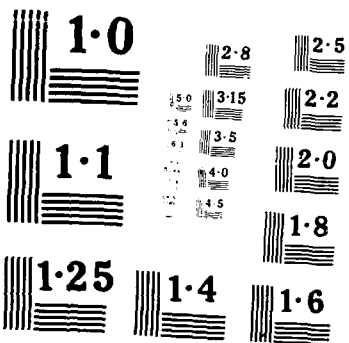INTERNAL MEDICINE CLINIC. (U) ACADEMY OF HEALTH
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The intent of this study was to develop and apply a model for analyzing health care provider productivity in the Internal Medicine Outpatient Clinic at General Leonard Wood Army Community Hospital.

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A STUDY TO MEASURE

CLINICIAN PRODUCTIVITY IN THE INTERNAL MEDICINE

CLINIC AT GENERAL LEONARD WOOD ARMY

COMMUNITY HOSPITAL, FORT LEONARD WOOD, MISSOURI

A Graduate Research Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Health Care Administration

by

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I. INTRODUCTION

Conditions Which Prompted the Study

The delivery of health care today is subject to significant financial constraints. The period of relatively unlimited resources has vanished. Health care managers must develop ways of spreading their scarce resources into areas that will provide the *greatest good for the greatest number.* As Rex Conn and associates note, identification of the actual costs associated with providing medical services has become increasingly important in order to prudently allocate available resources, with the ultimate cost savings occurring when a service is simply made unavailable.[1] *Enhanced resource utilization can be experienced by gaining knowledge of the productivity levels of health care services being provided in a Medical Treatment Facility and making management decisions accordingly.

In the health care arena, productivity is often associated with effectiveness and efficiency. Marilyn Mannisto states that effectiveness relates to the capability of producing desired results and efficiency is associated with the traditional productivity definition, that is, the ratio of output per unit of input.[2] The measurement, improvement and monitoring of these aspects (effectiveness and efficiency) of health care delivery are formidable but important tasks. Additionally, both quality of care and cost-containment must be considered in performing these measurements.

The United States Army Medical Department faces similar financial challenges to those experienced by its civilian counterparts. Though not

driven by a profit motive, the Army is obligated to the U.S. taxpayer to make maximum use of the resources provided. Thus costs must be controlled. Productive and non-productive services must be identified. Non-productive services should be analyzed to ascertain what, if anything, can be done to enhance productivity. If productivity cannot be increased, and other circumstances don't preclude it, then that service area should be dropped from that facility, or at least greatly modified.

The Army Medical Department, in general, operates at a bare-bones staffing level. The use of the Medical Expense Performance Reporting System (MEPRS) provides input as to workload versus hours worked and is used to determine how many clinicians will be required to treat a particular number of patients. However, the application of the MEPRS is viewed by many clinicians and administrators as significantly lacking in its ability to accurately reflect the true requirements for clinicians. It is felt that the MEPRS accounts for just a portion of total workload, providing input only on the number of patients cared for. Not reflected is patient acuity, all time spent on phone consults, both incoming and outgoing calls (only a small portion of phone calls seem to get recorded), special patient procedures, charting and dictating, Quality Assurance activities, committee meetings, mandatory military training requirements, et cetera. The general lack of credibility of the existing measurement tools creates a situation wherein managers make staffing decisions based upon the MEPRS and subjective analysis of workload. Meanwhile, clinicians see themselves as overworked and yet not properly credited for their time and effort, thus experiencing a significant morale problem.

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This situation is particularly acute in the Internal Medicine Clinic at the General Leonard Wood Army Community Hospital (GLWACH), Fort Leonard Wood, Missouri. The Internal Medicine Clinic at GLWACH suffers from a shortage of clinician staff (physicians, adult nurse practitioners, and support staff). The volume of care patients seek is significantly greater than can be provided by the staff available. Management would like to have the clinicians see more patients to offset a huge patient backlog, especially among the retiree population (approximately 300 patients were on a waiting list for new patient appointments in September 1987). Clinicians are frustrated both in knowing that they aren't able to treat all the patients who are seeking care and at the same time believing they are not having their actual productivity properly credited.

The question as to clinician productivity is most often raised in conjunction with the outpatient/ambulatory care clinic as that is the location of the greatest expression of need for care. The clinicians' time and efforts in treating the large number of patients seeking ambulatory care are the source of most of the productivity related questions. There are few complaints as to the clinicians' productivity in relation to caring for inpatients. A method is therefore needed to measure the outpatient clinic's provider productivity so that management can ensure maximum efforts are being exerted, so the clinicians can have their efforts recognized, and so that any questions as to their utilization can be alleviated. Thus the intent of this study was to develop and apply a model for analyzing health care provider productivity in the Internal Medicine Outpatient Clinic at GLWACH.

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Problem Statement

To develop a means of measuring health care provider productivity in the internal Medicine Clinic, General Leonard Wood Army Community Hospital, Fort Leonard Wood, Missouri.

Objectives

The objectives of this study were as follows.

a. Develop a model for analyzing productivity within the Internal Medicine Clinic.

1. Review appropriate literature.

2. Identify and define poplulation market segments served and services provided within the Medical Clinic.

3. Review MEPRS & Uniform Staffing Methodology (USM), Utilization Review and AQCESS data regarding medical clinic activities to ascertain current methodologies utilized and their relationship to findings of this study.

4. Identify productive and non-productive health care services being provided.

5. Analyze efficiency and effectiveness of health care services provided within the Internal Medicine Clinic. Utilize Case-Mix information for this analysis.

    a. Develop methodology to follow in implementing the model.

    b. Apply the model to GLWACH.

       1. Determine services that are provided most efficiently and effectively.

       2. Determine which services are not efficient or effective.

    d. Provide information to providers and to managment as to findings and plausibility of expanded use of model or of its discontinuance.

    e. Make recommendations for productivity improvement based upon the analysis. The most efficient and effective procedures and processes will be identified and will serve as the basis for the recommendations. The formulated recommendations will look at processes, documentation, and organization.

    f. If model is adopted, encourage management and individual clinicians to come to agreement upon expected level of clinician productivity, taking into consideration the individual physician's experience, for example, newly graduated residents can be expected to see fewer patients during a work day than physicians with greater than six months experience.

Criteria

The methodology used in the study incorporated the following features:

a. Patient health care needs, as defined by the Commander, had to be met.

b. Adherence to JCAH Standards of Care had to be maintained.

c. Effectiveness had to be reviewed to ensure that outcomes were appropriate, this so that efforts expended were not seen as a waste of resources in relation to the assigned mission. Effectivenes was measured by considering the quality of patient services, as identified by the number of patient compliments versus complaints in reference to the actual delivery of patient care (to measure satisfaction), as obtained from the Patient Representative Office, and the ratio of confirmed Misadventure Incident Reports to total number of patients served. This latter information was determined by an examination of quality assurance reports regarding follow-up outpatient visits and/or subsequent admission and other information that might arise from the quality assurance reports.

d. Efficiency needed to be reviewed in order to ascertain whether work was being performed in a productive manner. Analysis of efficiency was an objective of this study and was measured by review of clinician time in relation to patients treated.

Assumptions

a. The data collected by the MEPRS, Utilization Review and AQCESS were sufficiently reliable to permit analysis.

b. The average patient workload demand did not vary significantly

c. The cost of delivering patient care would not change significantly due to inflationary effects or other costs within the period of the study and for the period for which recommendations were made.

d. Provision of care was in compliance with JCAH and Army standards.

Limitations

a. There was not one generally accepted methodology for measuring provider productivity at this time.

b. There was not one generally accepted standard of superior or reasonably attainable provider performance in regard to efficiency and effectiveness

c. Staff estimates which form the basis for some interpretations would be highly subjective. Efforts were made to minimize the subjectivity by using managment expertise found in the comptroller's office to provide analysis and comparison of information submitted.

d. There was likely to be some selective reporting of data and occasional failure to properly record data

e. Staff cooperation may not have been complete in that some members might have been suspicious of the study intent, thus limiting their input, or they might simply have felt that they did not have the time to fully participate in the study.

Review of the Literature

The issue of productivity measurement is gaining in importance in

the health care industry. Diagnostic Related Groups (DRGs) and other efforts at reducing health care costs have caused Medical Treatment Facilities (MTFs) to examine resource use much more closely, with a special eye towards productivity. Smith and Taylor[3] provided some insight into the process of identifying productive and non-productive services in a study that examined revenue contribution versus utilization of Standard Business Units. The intent of their study was to provide a plan for the allocation of resources to institutional functions in relationship to their strength as producers of profit margin. A matrix analysis method was used in which twenty major hospital strategic cost units were identified and then placed into quadrants. The hospital could then select out those items of high volume/low price and high volume/high price to concentrate their marketing and cost-containment efforts respectively. When looking at the hospital as a whole, this type of analysis would work well, but it fails to address the specific productivity of an individual service/clinic. Unanswered are questions relating to which quadrant a particular service would fall into if an analysis determined improvements were possible in the productivity of its services as a whole or of any of its individual members.

Conn and associates,[4] indicated that standard accounting procedures can easily account for costs of utilities, pharmaceuticals, and payroll, but personnel costs related to specific medical services provided are another issue. Measurements to identify actual provider productivity are infrequently developed or accomplished. They identified the Workload Recording (WLR) Method developed by the College of American Pathologists (CAP) as a method worth emulating. Through WLR-CAP, computations can

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be made as to actual worked hours versus paid hours, thus allowing for backing-out administrative time spent at meetings, on break, et cetera, from paid hours so that productive in-lab hours are known and then costs per lab procedure can be figured. Reality tells us, however, that we must allow for administrative time to our workers as a cost of doing business. Additionally, the WLR-CAP method would appear to work in areas where specific procedures/activities are carried out, that is, where widgets can be counted, but in the more subjective areas such as patient evaluations, it would be difficult to apply this method.

Hanson and Nelson[5] note that health care is a service and its productivity measurement is not a simple matter. They developed a model for evaluation of personnel productivity and cost effectiveness in the Operating Room. Their model links the elements of OR activity function, resource appropriateness, resource effectiveness, resource use, productivity, resource cost (per hour), and cost effectiveness. However, they admit that though the concepts of their model are good, as yet there are no valid and reliable measures within the model.

It can be seen that there are some models that have been developed for use in the Laboratory and the Operating Room to measure the total cost and the productivity of personnel in the delivery of health care. Another area that has been studied is that of pricing and patient mix. Broyles and Rosko[6] developed a methodology using linear programming to help establish policies in relation to these subjects. The full cost per case was established by considering the variables of the patient's presenting condition, the type of labor the hospital employs in treating that condition as well as the consumable supplies for the inpatient stay (as measured by

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length of stay information), and ancillary services utilized. Their methodology could serve as one guide in measuring productivity costs and determining pricing and patient mix policies, but its complexity requires use of personnel with significant financial and statistical experience. Additionally, it presumes personnel are functioning at their best productive levels in performing their services. Financial concerns are of primary importance, to include charges for services, rather than whether best productivity is being attained.

Deguchi and associates[7] developed a method for measuring provider productivity in ambulatory care that serves as a good starting point in conducting a study on the subject. The subject of their study was an analysis of a central scheduling versus an in-clinic scheduling of patient appointments. They looked at the provider's capacity for patient visits in a particular time period, accounting for provider down-time due to no-shows and unfilled appointment slots. They determined that by dividing each hour into six units, they could analyze productivity while still accounting for mix of patients. They also discouraged measuring productivity solely based upon volume (which by itself might encourage providers to offer redundant services). Obviously their study concentrated on one particular aspect of provider productivity (scheduling) and self-admittedly their results may have been influenced by the "Hawthorne effect", but their overall methodology was a good one and provides important insights into elements that should be incorporated into any study on provider productivity.

Burkhart and Schultz[8] looked at professional productivity as

professional time input in relation to services delivered. They noted that approximately two hours daily is spent on nonrecoverable to direct services productivity, e.g. redictating lost reports. They developed figures based upon how much direct patient care time individuals can expect to provide per year. Their focus was on some of the significant components in the relationship between professional productivity and costs in the health care system. Their study took into account the clinicians time spent away from direct patient care, to include vacation time, sick-leave days actually expected to be used by the average clinician, inservice training, and continuing medical education seminars attendance days. Time spent as members of interdisciplinary teams and at related meetings, assisting other clinicians (who would receive the productivity credit on their work statistics), and time spent on behalf of a patient during a school visit but that was not directly credited, were all considered in review of provider productivity. The study lasted a year so that all of the above considerations could be factored into the study. The findings revealed about 59 percent productive time, 19 percent absence time, and 21 percent nonrecoverable time for the average clinician These findings provide a useful reference for other studies of provider productivity, though duplicate studies must be conducted over a year's time period. This obviously takes significant researcher time and requires long-time staff participation and cooperation. The results also indicate a large commitment from clinicians and management to work together in reaching professional productivity agreements.

A 1977 study[9] conducted at the University of Southern California

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School of Medicine utilized a log-diary maintained by study participants to account for the number of professional hours, number of outpatients and inpatients, and number of telephone encounters plus on-call hours per week. The study then measured productivity by looking at number and type of encounters, number of diagnostic tests and procedures, total professional hours available and hours spent in various types of professional activities. The study's final measure of productivity became the proportion of total number of patients seen during one week per total number of professional hours worked. This study's subjects were General Internists from across the country. Their provision of primary and specialty care were primarily examined through use of a "Care Classification System" that listed thirty leading patient problems and a taxonomy that identified five types of patient care as opposed to two. Data collected reflected patient volume, physician/patient encounter characteristics, and organization of medical practices. This exhaustive study reflected on provider productivity as part of its analysis. It was determined that practice arrangements (office based, Institutional and Other), age of internists to some small degree, and demographic location of the practice affect clinician productivity. The military environment is fairly well established in regard to two of these three factors, with only the age of the clinician being variable between hospitals. Age and experience are significant considerations for productivity in the military due to the large number of clinicians who have just completed residencies who are practicing in military hospitals. Although internists' age had only a small degree of influence on productivity in this study, any future

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research in the military needs to account for this factor. Otherwise, this study provides some valuable insights regarding predominant patient problems, types of patients, and physician/patient encounters.

The literature reviewed for this study provides a good appreciation for the considerations that must be incorporated in any study on clinician productivity. As yet, however, there does not appear to be one generally accepted methodology to follow in measuring productivity. Integration of pertinent aspects of various studies must be accomplished in tailoring a study to measure provider productivity in a particular scenario.

Research Methodology

a. A review of the literature was conducted to obtain a general knowledge and understanding of previous efforts to specify productivity.

b. Using variations of some of the studies found in the literature, a model and methodology to follow were formulated.

  1. Clinician productivity was measured as.

    (a) A product of patients seen and category of visit to yield care units per hour. Units per hour relates the number of visits in each visit category to a time standard (1 unit = 10 minutes), e.g. a twenty minute visit equals two units. The number of units expected to be seen was based upon the historical pattern of time of visit for presenting diagnosis and upon results of the USC Study of

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Internal Medicine Practices with resulting listing of the mean minutes per encounter for 30 leading principle problems, by First Encounter and by Principal (normal Patient-Clinician) Encounter.

(b) Proportion of total number of patients seen during one day to the total number of professional hours worked (the literature indicated that seven patients can be expected to be seen per three hour session).

2. Methodology followed.

(a) Inquiry was made of clinician staff as to their estimate of most appropriate length of patient visit per type of case – for most common diagnoses.

(b) Clinician staff's work hour was divided into six units.

(c) Clinicians were provided with form/checklist to account for their units of time (see Appendix A). The checklist included slots for time spent: directly with the outpatient, on record entries, waiting for patients, on professional readings, on military duties, on inpatient duties, on Medical Officer of the Day (MOD)/Emergency Room duties, on the telephone, and in-transit within the hospital.

(d) Respondents were questioned as to non-patient care practice factors such as vacation and illness.

(e) Through use of a chart review and a questionnaire (see Appendix B), the following patient factors were analyzed: new or return patient, type of disease, number of diagnostic tests ordered, number of therapeutic procedures, number of patient problems dealt with by the clinician during the visit, and the age of the patient.

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(f) Patient factors were analyzed in regard to clinician time spent with the patient.

(g) Each clinician in the study was surveyed over one 3-day period (M-W) and a subsequent 2-day period (Th-F) during the period 18 May -3 June 1987. (Some clinicians had limited days spent in the clinic and were surveyed for those days only. The data for this small representation was consistent with the rest of the input.)

(h) The data was analyzed to see how much time an individual clinician might be expected to spend in direct patient care per week. Based upon previous studies in the literature, it was estimated that approximately 2-hours daily is spent on activities non-recoverable to direct services productivity and thus the number of outpatients actually seen was expected to be reduced to allow for this time.

c. A listing of primary patient conditions presented at the Internal Medicine clinic was obtained using information as obtained from the staff from completion of a questionnaire (see Appendix C).

d. The methodology was validated through input from personnel from the Army's Academy of Health Sciences and from personnel on the GLWACH staff.

e. Interviews were conducted with the Medical Department and internal Medicine Clinic Chiefs, soliciting their support and input. These interviews were conducted after initial formulation of methodology so that a structured interview (with specific direction) could be used to obtain their insights and assistance, especially regarding methodology steps b, c, d, g, j, and k.

f. interviews were conducted with the remaining staff in the

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Internal Medicine Clinic, soliciting their support and input. As in 'e' above, these interviews were conducted after initial formulation of methodology so that a structured interview (with specific direction) could be used to obtain their insights and assistance, especially regarding methodology steps b, c, d, g, j, and k.

g. An in-depth study of the present system, to include the mission, goals, organizational structure, and management practices, as well as staffing, space utilization, case mix, patient acuity and patient care scheduling was conducted. This study provided insights into the demands made upon the health care providers in the GLWACH setting. Provider variables that were anticipated to be incorporated into the GRP as a result of this review included, but were not limited to: Quality Care, for example, as indicated by physicians practicing in the Internal Medicine Clinic, concern that more time is needed for follow-up visits (30 minutes) and for new appointments (60 minutes) than is allowed through the current appointment schedule which allows 20 and 40 minutes respectively, ward rounds, phone consults (both incoming and outgoing calls), special patient procedures, charting and dictating, physicians covering ER while serving as HOD – which also means time away from the clinic plus probable time off the next day, QA records review and other QA activities, committee meetings, mandatory military training requirements; et cetera.

h. The model was applied using Internal Medicine Clinic input.

i. The results were analyzed.

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j. Current productivity measurements through use of MEPRS, utilization Review and AQCESS were discussed with program users in order to obtain a better understanding of data collected and utilized.

k. A review of data collected for the same time period of the study by the current measurement systems was conducted and a comparison was made with the study data.

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II. DISCUSSION

General

General Leonard Wood Army Community Hospital (GLWACH) is a general hospital supporting Fort Leonard Wood, Missouri, and seven health clinics in four states. GLWACH, a 500 bed facility currently operating 156 beds, serves approximately 51,690 personnel in the immediate catchment area -- 16,120 Active Duty, 9716 Dependents of Active Duty, 20,965 retirees and dependents of retirees, and the remainder being civilian employees and other personnel (figures as of 3rd quarter, Fiscal Year 87). A review of hospital wide daily clinic visits reveals that out of 1385.1 patients seen in third quarter FY87, 53% were Active Duty Military, 21% Dependents of Active Duty, 18% Retired Military and Dependents of Retired Military, and 8% Other. Furthermore, out of 42,014 clinic visits in the first three quarters of FY 87, 2116 were to the Internal Medicine clinic. The inpatient daily census averaged 125.1 for third quarter, FY 87, with an average of approximately 17 medical patients.

The general mission of GLWACH is to provide the highest standards of quality health services, both inpatient and outpatient, to authorized personnel. Limited resources, especially the limited availability of provider and ancillary staff, necessitates priority of services first to active duty members, second to dependents of active duty members, thirdly to retirees and dependents of retirees, and fourthly to others. No

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curtailment of services has occurred, but adherence to the priority criteria is required. The number of patients seeking health care is far greater in many hospital services than are the resources to provide that service. This situation is especially true in the Internal Medicine Clinic, where, as of September 1987, there were some 300 patients on a waiting list for entry into the system.

The Internal Medicine Service's functions include the diagnosis, care, treatment, and proper medical disposition of patients, clinical and consultative services, medical care evaluations, preparation and submission of records and reports, and professional training. It is organized as part of the Department of Medicine. Other departmental services include Dermatology, Allergy, and Pediatrics. During the study period of May and June 1987, the Medicine Clinic itself was staffed with a Chief, whose primary specialty was Internal Medicine with a subspecialty of Gastroenterology, five Internists, and two Adult Nurse Practitioners. Two of the Internists were two years out of residency training and two others were one year out of their residency. Three of the Internists were departing in middle to late June for Fellowship training and the other Internist was departing the first part of August for additional training. One of the Adult Nurse Practitioners was also departing in late June for advanced training. All of the departees were scheduled to be replaced, though there would be two to six weeks elapsed time prior to replacement. The turnover of personnel is an annual problem in the Internal Medicine clinic, one that contributes to disruption of continuity of care and

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presents a hindrance to productivity. Remaining clinic staffing includes a Non-Commissioned Officer-In-Charge to coordinate the administrative running of the clinic, a Secretary, a Receptionist, and both a Licensed Practical Nurse (LPN) and a nursing assistant to assist with Oscopy procedures.

Description: Current Clinic Operations

Staff clinicians are each provided an office with an adjoining patient treatment room. Patients report to the receptionist and are logged in, then are seated. The clinician himself/herself walks to the reception area, picks up their next patient's records, and calls for the next patient. The patient is escorted back to the clinician's office where they are seated and a history is taken. The patient then moves to the treatment room, removes appropriate clothing, and is examined by the clinician. The clinician then goes back into the office and awaits the patient's redressing and return through the office. Further discussion is conducted at this time, if for no other reason than the fact that the patient must traverse through the clinician's office to depart. (In fact, there is a door to the patient treatment room, but patients are rarely requested to depart through it.) During the course of the history taking and the exam itself, interruptions often occur, caused by telephone calls from personnel outside the clinic calling directly to the clinician rather than through the receptionist and from the receptionist transferring calls to the clinicians. Some of the calls from patients or from other clinicians seeking consults are logged by the clinician and workload credit is captured, but a

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significant number, as observed by the author, are not, thus workload data is lost. Additionally, patients needing only prescription renewals walk up to the receptionist, who logs them in and then awaits the Medical Officer of the Day (MOD) - a duty rotated between the physicians - or another appropriate clinician to be available to review the medical record and sign the new prescription (on which the receptionist has already filled out the administrative information). In the current workload measurement system, the physical seeing of a patient, the phone consult (when logged), and the rewriting of a prescription all receive the same credit for a patient visit, though obviously significant differences exist in the individual clinician's work efforts to accomplish each.

Normal clinic hours are from 0730-1630 Monday through Friday, except holidays. Clinicians normally arrive sometime between 0700 and 0730 and proceed immediately to make rounds on the inpatient wards. They are usually ready to begin seeing clinic patients between the hours of 0800 and 0830. Most of the clinicians make ward rounds again in the afternoon prior to going home, thus sometimes not leaving the hospital until 1700-1800 hours or later. One of the internists is designated as the Medicine Officer of the Day (MOD) and must be available to respond to any emergency situation in the Emergency Room or in any other location, e.g. intensive Care Unit, in the hospital. The MOD also is the clinician responsible for the walk-in patients who are referred to the clinic for same-day consults from other clinics in the hospital. The MOD is thus exempted from scheduled appointments for that day of duty, though they may have self-scheduled return patients to be seen on the day of their

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MOD duty

Appointments are scheduled in one of two manners. One is by the clinicians themselves with what is called "blue time." This period consists of the morning hours and is provided for the purpose of clinicians being able to schedule chronic patients who they wish to see on a frequent, perhaps weekly, basis; to schedule time for special procedures, to schedule time for completing medical records and quality assurance reviews, etcetera. The other manner of scheduling appointments is through the Patient (Central) Appointment System (PAS). Six weeks in advance of actual appointment weeks, the clinicians provide PAS with their available afternoon appointment hours. Patients then call PAS for routine follow-up appointments and first time (new) appointments. Routine patients are scheduled at fifteen minute intervals and new patients at thirty minute intervals. When the clinician is first assigned to the clinic and lacks experience with clinic procedures these times are set at twenty minutes and forty minutes respectively. After two months experience the times are reduced. No adjustment in time of appointment is provided based upon the patient's own diagnosis, nor would it be feasible to do so in light of the lack of medical qualifications of the clerical staff making the appointments. A hospital study of decentralization of all appointments is underway, though the medical clinic is not one of the test clinics for such a system.

Clinicians are confronted with a number of responsibilities which take them away from clinic productivity. These include attending clinic and department meetings, attendance at mandatory military requirements, such as the physical training test and safety training, professional

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continuing education presentations given in GLWACH (when the clinicians can break away to attend such), and, staying current with their professional literature. As is apparent, there are many demands on the clinicians' time.

Analysis: Current Productivity and Workload Measurements

There are a number of reports currently relied upon by management to measure work output of hospital personnel and in computation of the cost of doing business. One of the primary tools now used is the Direct Expense Schedule (DES). This system, in which costs are assigned to each work area, records and tracks utilization of funds. The hospital's overall resources consumption is divided among six general areas: inpatient care; ambulatory care; dental care; ancillary services, support services, and special programs. The first three of these are fairly self-explanatory. Ancillary services, whose weighted workload is reflected in the Automatic Source Data (ASD), refers to those services in support of patient care in such areas of radiology, laboratory, and pharmacy. Support services are related to administrative and management functions, to include buildings and grounds and food services, et cetera. Finally, special services relate to things such as patient transportation/transfer costs, public health services and other programs that consume resources but do not provide direct patient care. All hospital workload not captured by the ASD is accounted for in the Expense Assignment Stepdown (EAS). Each

work center is assigned a Uniform Chart of Accounts (UCA) code so that all expenses related to work provided in that center can be assigned to that center, to include non-personnel expenses and performance data, as well as Full Time Equivalent (FTE) man-months and salary expenses.

DES, ASD, EAS and UCA functions are subsections of the Medical Expense Performance Reporting System (MEPRS). The MEPRS combines hours and workload in an attempt to determine how much time it takes to operate each work center, and includes supply and overhead costs. A further subsection of the MEPRS is the Uniform Staffing Methodology (USM), the collection system for manhours data. The USM lists every position in the hospital according to Table of Distribution and Allowances (TDA) line number, and the number of hours each incumbent is credited with working each day. A designated person in each work center is responsible for collecting and reporting the number of hours each person was at work (normally the input for this is based upon the individual's recollection at the end of the week as to their hours at work for the preceeding week), and these hours are classified as "available hours." Also reported are hours incumbents are not available due to being on leave, pass, sick leave, on holiday time, etcetera, and these periods are considered "not-available" hours. The third ingredient to the USM is called "assigned hours" and consists of normal operating hours (eight hours a day) in a month (to include holiday time). Twice a year each clinician is surveyed as to his/her best guess of the percentage of time he/she spends in each work center. For example, an internist might say he/she spends 35% of time in the Internal Medicine Inpatient area, 60% in Internal

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Medicine Outpatient Clinic, and 5% with Cardiology Inpatients. This latter information is then applied to the USM to determine assignment of work hours (and related personnel costs) to work centers. Workload data as to number of clinic visits credited and number of inpatient work units earned by work center can be obtained from the MEPRS. This workload data is dependent for accuracy in the various accounts upon proper reporting of/accounting for each visit (and visits include all phone call consults, prescription rewrites, et cetera). This reporting was observed to be haphazard and suspect, especially regarding "blue time" (physician self-scheduled appointment time) and phone calls made directly to the physician. Inpatient data comes from the Patient Administration Division and can be considered accurate as each inpatient is indeed physically present and assigned to a service. This data is then applied to a locally developed Utilization Review system which incorporates criteria from the Army's Staffing Guide as to the number of clinic visits and number of inpatients needed to justify the assignment of clinicians. For example, in Internal Medicine 300 clinic visits per month are needed to justify a physician and one physician is justified for each thirty occupied beds. An analysis of this information may be used to discover how many clinicians are justified based upon workload. Each clinician is reviewed individually as to their contribution to the clinic's total productivity. Thus the percentage of time that the clinicians themselves indicate they spend in each work center, their estimate of total hours spent at work each day, and clinic visits, numbers of questionable accuracy, are used to measure productivity. It is of concern that the acuity of the patients being treated

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by each clinician is not recorded in relation to work performed. A clinician seeing more acute patients and thus spending more time with each visit would be reported as seeing less patients and would appear on paper not to be contributing his/her fair share of the workload. The current system does provide a relatively simple method of analyzing work center productivity and, if applied uniformly, could be used to obtain a general picture of the hospital's output. An assumption in the current system is that things will balance out, for example, the time spent with acute patients will be balanced with the little time spent with prescription rewrites, or that uncounted workload will balance against uncounted hours worked. The resources needed to implement an improved methodology might be prohibitive to the installation of such a system, but the clinicians place little credibility in the current system. They do not believe it reflects a true picture and thus they just go through the motions of data input. Additionally, they conclude that the number of clinicians assigned, and the other resources provided, have little to do with this data. Rather, they believe that historical patterns of allocation of resources, the amount of resources available to the Army, and the reallocation of resources to problem areas (caused by limited resources), that can no longer be ignored due to public outcry, are used in determining which facilities receive which resources.

Analysis Clinician Input

A survey regarding Productivity Factors (Appendix C) was

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presented to the seven Internal Medicine clinicians and each clinician was individually interviewed. Their responses reflected the above mentioned feeling that portrayal of patient numbers alone does not reflect the actual time needed to be taken with patients. The unanimous consensus was that a new patient normally takes almost twice as long to see as a return patient does, with documenting of patient History and Physical being responsible for the additional time. Table 1, derived from information on each clinician gathered in the clinic during periods of observation, does reflect an increase in time needed to examine a new patient versus a return patient, but the average length of the increase does not approach a doubling of time. Clinicians also felt that their patients' average age was higher than for other clinics and that these older patients have more than one presenting problem, thus their exams take longer than those of patients in other clinics.

A 1977 University of Southern California study[1] found that General internists' patients do tend to be disproportionately older as compared to the census estimates for the population as a whole. For example, though the U.S. population is estimated to be 11.1% in the age group 45-54, general internist's patients are 15.9%, in the age group 55-64 the U.S. estimate is 9.3% and the Internist's patients are 19.8%, and finally in the age group 65 and over the U.S. estimate is 10.5% whereas the Internist's patients are at 34.9%. Table 1 reflects that the average GLWACH Internal Medicine Clinic patient is 53.4 years of age, thus confirming the older age of patients who are seen in the clinic.

Similarly, as shown in Table 1, it was found that the number of

Clinician	A	B	C	D	E	F*	G*	AVG
Avg Visit Time of New Patient in Minutes	36.7	17	25	22	25	33.3	34.4	30.98
Avg Visit Time of Return Pt. in Minutes	30	24.9	18.7	20.8	11.6	21.8	29.2	23.3
Avg # of Problems per Patient	1.68	1.17	1.37	2.13	2.13	1.74	2.65	1.99
Avg # of Diagnostic Tests Per Patient	1.47	.29	.25	.88	.8	1.87	1.57	1.41
Avg # of Therapeutic Procedures Per Patient	.05	.23	1	.05	.25	3.22	.17	.76
Avg Patient Age	52.3	58.1	53.7	46.3	53.1	49.9	54.9	53.4

*Note. Clinicians F & G were Adult Nurse Practitioners.

Table 1: Patient Related Factors per Clinician

presenting problems from the average patient was almost two problems
(1.99) per visit. During the gathering of the data, it was observed that
there were a number of patients who arrived with three and four
complaints. Thus the clinicians' intuition was substantiated in the
findings of this study.

Providers indicated that they were required to do numerous
non-hands-on patient care activities for which they currently receive
little to no credit. Things such as military duties, meetings, Quality
Assurance efforts, patient coordination with the Laboratory and X-Ray, and
professional staff conferences were mentioned prominently as examples
of part of the job that the "system" doesn't allow time for in its
productivity measures. The Daily Survey of Clinician's Work Time as
captured by the Provider Log/Diary (Appendix A), the results of which are
reflected in Appendix E, indicate for each provider that a significant
percentage of time is spent in "other" activities (Column 12) and "Military
Duties" (Column 9) such as those mentioned above. Paragraphs 'c' of
Appendix E also reflect large amounts of time, ranging from 13% to 77% of
time in a given day, in individual clinician activities that are not direct
hands-on patient care (not actually face-to-face with the patient). These
findings are in keeping with the Burkhart & Schultz year long study which
revealed only 59% productivity time, 19% absence, and 21%
non-recoverable time for the average clinician[2] and suggest an even
greater diversion from productive time. Most of the clinicians indicated
they earn "compensatory time", that is, they work more than an eight hour
day, with the physicians particularly indicating one to two hour daily work

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hour extensions. They attribute this to a combination of inpatient requirements and not having enough time to complete the "other" requirements of the job during the normal eight hour day. Few of the clinicians actually take compensatory time off. Fortunately, with the group type practice the clinicians operate in, they indicate that they are able to take vacation time to get away for rest and recuperation periods.

The Clinicians were uniformly in agreement that the visit numbers, as presently collected, do not appropriately reflect the time spent with patient care. Table 2 supports this contention. Reviewing the figures presented, one observes that a significant percentage of a clinician's time is spent on prescription rewrites, but these normally only take a matter of minutes, yet they still receive the same workload credit as do lengthy examinations. A prudent clinician would be wise to ensure they get to perform their fair share of prescription rewrites so that their total productivity looks good. This circumstance reflects a workload measurement system that sends mixed messages regarding productivity expected, invites gaming, and even punishes a clinician who takes on more serious and lengthy examinations. A new measurement system needs to be developed that gives more weight to the involved activities than to the easier procedures. The Productivity Measurements of this study attempted to provide some insights into this type of system.

Analysis. Productivity Measurements

The model developed for this study takes into consideration the

	Clinicians							
	A	B	C	D	E	F	G**	H**
Visits Credited by MEPRS*	39	57	56	65	41	42	138	62
% by Type of visit (Per data from this study)								
Appointments	57.5	46.7	19.7	13.6	21.9	2.4	37.1	61.3
walk-ins	15.0	18.3	1.8	10.6	-	-	8.6	6.5
Consults	-	3.3	3.5	24.2	-	11.9	-	-
Chemo	2.5	-	-	-	-	7.1	6.4	-
Gold Tx	-	-	-	1.5	12.2	9.5	6.4	-
BP Check	-	3.3	-	1.5	-	2.4	8.6	6.5
Phone	20	-	1.8	6	24.4	-	11.4	9.6
Pre-Script Rewrites	5	28.3	73.2	42.5	41.4	66.6	21.4	16.1

* For periods of two to nine total days depending upon the clinician.
** Adult Nurse Practitioner

Table 2. MEPRS Credit & Type of Visits

measured with the patient and the resulting length of patient visit. An example of the use of this model is at Appendix D. The model can be used in evaluating productivity during any length of patient care session. The assignment of units to the model provides a more managerial means of evaluation. The normal units in an hour (six) serve as the base line upon which productivity is measured. Units accumulated for outpatient care provided are figured as indicated in Appendix D, plus units accrued based on the time taken to accomplish them as assigned for other work session activities. This methodology establishes six units as the target capacity. A productivity index below six for the work session indicates that productive capacity still exists whereas figures above six indicate output above the norm.

The data from individual clinicians observed in this study is presented in Appendix E. The figures in Appendix E, paragraphs "a", reflect the portion of the work session attributable to direct patient care, and the total productivity for the session is indicated as the Total Units worked. Also indicated are the MEPRS counted visits attributed to a particular clinician during the work session (to permit comparison with the current system).

The system as developed did not provide for a determination of the appropriateness of the length of time to conduct a particular examination. Hence, predicted values for particular type of examinations were arrived at by use of the USC Study data[1] (Appendix F) and times locally developed as reflected in the note at Appendix D. This allows for an evaluation of a clinicians productive work that also compares it to some standards for particular examinations. For example, an analysis of Clinician A on this

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care shows that he/she worked near the full day's capacity on days one, three, and five, exceeded it on day four, and was beneath on day two. On day one the clinician spent over 43% of the total work session examining patients (as indicated by actually observed time spent with patients), though the log diary survey data reflected in paragraph "d" indicates 55.13. This discrepancy indicates time spent during the patient care session while a patient was not in the provider's actual care, e.g. time between patients. The comparison with the external standard indicates that the clinician was not as efficient at conducting examinations that presented to him/her during the period of the work session as would be expected from the standard (as reflected in the USC study).

A comparison among physician clinicians thus indicates that Clinician F was the most productive, to include accomplishing work in less than the predicted standard. Clinician A was well below the standard on day two, well above on day four, and near standard on the other days. He/she accomplished more units per hour than predicted on the first four of the five days examined. Clinician B worked near total capacity on all days and near the predicted standard except on the second day, where he/she far exceeded it. Clinician C worked near total capacity on all days, with an index well above target output on days four and five. However, days four and five were also the days when he/she exceeded the predicted patient treatment times in the standards. Thus the services provided by this clinician would not appear to have been administered very efficiently. Clinician D was an average performer. Clinician E accomplished fewer total units but also accomplished the patient care more rapidly than expected by

... predicted standard. Both Clinicians G and H are fairly average performers, with a slight total productivity edge to Clinician G, especially in relation to the predicted standard. (Assignment of internal medicine standards to Nurse Practitioners – Clinicians G and H – may not be appropriate, though for purposes of comparing the two of them it is fair to apply the same standard to each.) Clinician G was really busy on day two. Application of the standard would indicate he/she wasn't as efficient in treating patients on that day. The use of a standard is advantageous, but development of standards for both physicians and nurses in the military is probably still not yet feasible. Perhaps the use of a Diagnostic Related Group (DRG) type system with weights assigned to types of patient conditions would be appropriate however. Collection of the data would be a problem that would have to be resolved.

Reviewing the number of patients seen per hour of work provides additional insight into provider productivity, as well as providing management with an idea of how much productive time daily is actually spent by clinicians in hands-on patient care. Appendix E, paragraphs "b", reflect this information. The numbers indicate the patients seen over the entire work session, first number of sub-paragraphs (a) and (b), and the patients seen during the concentrated appointment periods, second number of sub-paragraphs (a) and (b). Additionally, reviewing just appointed patients (paragraphs 'a') versus incorporating all other types of visits (paragraphs 'b'), to include prescription rewrites, provides insights into clinicians seeing the "harder" patients versus those patients that are "easier" but which under the current system receive equal productivity

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credit. A comparison between Clinicians G and H indicates that Clinician H sees more patients per hours worked but during the concentrated patient appointment periods, Clinician G is a little more productive. One could surmise that Clinician G is not providing as much overall hands-on patient care as Clinician H, but when patient care is provided, Clinician G is more adept at providing it. More in-depth monitoring of Clinician G's patient care time might be appropriate to insure that he/she is not allowing too many other activities to impinge on Clinician G's patient care time.

Adding in the "extra" visits in paragraph (b) significantly increases the productivity indicators, but without accounting for type of visit. This same comment is applicable to the physician clinicians. Clinicians C and E appear to be particularly adept at garnering workload beyond that acquired during routine patient appointments. Additionally, Clinician C reflects small numbers of patients seen during the day, but is highly proficient during concentrated patient care periods. Clinician C lacks overall productivity and should receive similar monitoring as mentioned above for Clinician G. Clinician E is adept at providing productive services throughout the day as well as being particularly adept during the concentrated patient appointment periods. Clinicians A and B are steady, though relatively less productive, performers. Clinicians D and F are providing overall productive services. All the clinicians reflect some increased patient visit numbers during concentrated appointment periods, with Clinicians C and G, as mentioned, being most productive during these periods.

In a hospital based practice, time spent taking care of inpatients

becomes a significant part of the job requirements. This is reflected in Appendix E, paragraphs 'c', with Clinicians B, C, E, F, and, for a Nurse Practitioner, G, spending significant amounts of time with inpatient responsibilities. This, of course, reduces the time available to treat outpatients, though making this statement is not meant to imply anything negative about caring for inpatients.

Using the case-mix standards incorporated in the USC study and augmented by GLWACH staff input, it was discovered, as was discussed earlier, that Clinician F was the most efficient health care provider in the medical clinic and Clinician C was the least efficient. However, using strictly results obtained by review of the number of patients treated per hour, Clinicians C and H were most efficient. As can be seen, Clinician C was least efficient or most efficient depending upon the measurement tool. It seems that the most enlightened tool would account for case-mix and thus the former tool should be used by managers.

The effectiveness of the care rendered by clinicians in the Internal Medicine Clinic was determined to be good. The Patient Representative Office's listing of complaints was minimal, with an average of less than two a month relating to the care. The main complaints, an average of 17 per month, with the medical clinic were based upon inability to get an appointment. Additionally, effectiveness was considered good in light of the almost non-existent number of Potentially Compensatory Incidents (PCI) and mis-adventure reports as reported through the Quality Assurance system.

Other Productivity Related Observations

Regarding the current clinic operations, several observations resulted from the conduct of the study. The clinician's have "blue time" to self-schedule return patients and special procedures. However, these appointments are kept on their individual calendars. Thus, the receptionists can't get patient records delivered from the central records office the day prior to appointment, causing the patient to have to stop at the records desk to obtain their records prior to arriving at the medical clinic. This also means that the clinician can't review the record prior to the patient's arrival even if the clinician were to have time to do so in order to save time once the patient was being examined. Additionally, the failure of patients to keep appointments, that is, No-Shows, isn't captured since the receptionists don't have the schedules. This should be changed so that a schedule form is provided by the hospital, completed by the physician, and collected by the receptionist the day prior to appointment in order to obtain patient records, keep track of no-shows, and provide the receptionist a knowledge of the clinicians schedule so that phone calls, et cetera, can be referred appropriately.

Currently many phone calls are received by the clinician during the course of a patient examination. This is disruptive to concentration on the patient as well as annoying, plus the calls regarding patients or from patients often don't get logged for purposes of productivity counts. All calls should go through the receptionist who in turn should only interrupt

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the clinician in emergencies and otherwise should get phone numbers to return the calls. The receptionists should also place the return calls when possible. These measures would enhance provider productivity.

Clinicians currently escort their own patients from the waiting areas to their offices. This takes additional productive time from the clinician. Placement of one waiting chair outside each individual office so that the next patient, escorted by the receptionist, is placed outside the clinician's office would save clinician time. The study did not report clinician's complaining about waiting for patients, however, comments were received from clinicians to this effect.

The clinicians have only one treatment room and it is adjacent to their offices. They must wait for patients to undress and dress. Additionally "polite conversations" must be carried out with the patient as they enter and exit the treatment room through the clinician's office. A second treatment room would allow for more expeditious care and allow "polite conversation" to be carried out in the treatment area as part of good bedside manner and to be terminated when the clinician excuses themselves from the room. The current clinic configuration does not allow for a second treatment room, however a space utilization study should be undertaken to ascertain how to resolve this problem.

GLWACH currently provides no policy guidance concerning the number or percentage of hours that should be invested in direct patient care per week versus hours directed toward other activities. Establishment of a general policy providing parameters within which health care providers should strive to perform might remove some degree

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of uncertainty about command (management) expectations and serve as an incentive to keep non-direct patient care endeavors down at a reasonable level

Better productivity would definitely result from actions taken to alleviate the above described problems.

ENDNOTES

[1] Robert C. Mendenhall et al. (1977). Internal Medicine Practice Study Report. A Study Conducted by the Medical Activities and Manpower Projects Division of Research in Medical Education at the University of Southern California School of Medicine, Los Angeles, California, August 1977.

[2] Burkhart, M.C., & Schultz, M.C. (1979) Management of Health Service Delivery and Professional Productivity: A Case Study Model. Public Health Reports, 1979 Jul-Aug; 94(4): 326-31.

III. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A means was developed by which to measure health care provider productivity in the Internal Medicine Clinic, General Leonard Wood Army Community Hospital, Fort Leonard Wood, Missouri. Though coordination of the collection of data needed to implement the measurement tool is potentially difficult, the resulting information does provide insights into the true productivity of the health care providers in the clinic.

The study indicates that, using case-mix standards, Clinician F provided the most productive services, closely followed by Clinicians A and B. Clinician C was efficient on 60% of the days evaluated. Clinicians D, G, and H were average performers. Clinician E saw fewer total patients but was efficient for those patients that were seen. Clinician G was productive in the total number of patients treated, but was not efficient in providing the services.

When patients treated per hours worked was used as the productivity criteria, Clinician E was most productive. Clinicians C and G were particularly adept at turning out the patients during concentrated patient appointment periods while Clinician H was productive when total patients treated per day were evaluated. Clinicians D and F were good producers and Clinicians A and B were steady performers.

The fairest and most meaningful measurement of productivity is the

standard incorporating case-mix. Clinicians can be better evaluated as to their contributions to health care services rendered by GLWACH using this or a similar tool.

Health care rendered to inpatients appears to be highly productive, though taxing on the endurance of the health care provider, as well as detrimental to outpatient productivity. Also, clinicians spend productive time on the telephone but are recalcitrant in having these efforts recorded. Another productive activity is the writing of prescription refills, though care must be taken by the clinicians to make proper entries in the patient records so as not to jeopardize the workload count acceptability (by HEPRS personnel) of these endeavors. The clinicians use of "blue time" to self-schedule patients satisfies their sense of need for control of at least a portion of their work schedule. However, the implementation of these schedules results in a degree of non-productive time. A formalized Decentralized Patient Appointment System would alleviate the non-productivity of certain aspects of "blue time."

It was determined that the effectiveness of the care provided was good in light of the paucity of complaints and lack of Potentially Compensatory Incidents and mis-adventure reports.

The clinicians in the Internal Medicine Clinic are working productively overall. Their efforts, however, are hindered by a system that encourages treatment of "quick and easy" cases in the outpatient setting so as to get visit counts that reflect a productive clinician and service. A methodology to more appropriately account for type of patient visit and thus of the work effort is needed. The model introduced in this

study provides for this to some degree. It does allow for award of productive points based upon length and nature of patient cases treated during the work session plus points for other than hands-on patient activities during the work session, as well as a review of patients seen per hour. Furthermore, it provides for a comparison of the productivity of various clinicians using a fair assessment as opposed to just a numbers game. Additionally, it gives an indication of the significance of weighting various categories of patients in measuring productivity. It is lacking, however, in its ability to compare the length of patient exam with a standard for a similar exam. It is also deficient in the ease with which informational data can be captured. Reliance upon the clinicians to provide detailed information is not likely to result in the information being captured. A system that would make use of a DRG type standard and one where the data would be captured by receptionists and administrative medical records personnel might have a better chance of working. For instance, the receptionist could log the patient in and out of the clinic, to include listing of times, though the actual time with the clinician under the current clinic arrangement would not be recorded since the patients are called back to the clinicians office by the clinician themselves. If, however, the receptionists were to escort patients to the clinicians office, times could be more easily recorded. Also, if the clinicians knew that credit was being given for patient acuity as well as for other clinician activities, they might themselves be motivated to keep better time records. Additionally, should a standard become available based upon patient diagnosis, then patient records personnel could enter the

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particular patient's diagnosis and date of treatment into the computer and this information could then be matched against information as to the hours of a clinician's work session.

As can be seen, the intricacies of the model presented, both in collection of data (requirements for fairly detailed information) and in assignment of standards, makes its routine use difficult. It does, however, provide a starting point from which other models might be developed. Establishment of weights for different types of procedures should be investigated so that knowledge of the kind of a procedure alone can be used in assessing provider productivity.

Recommendations

The results of this study indicate that some actions are needed to improve the current Internal Medicine Clinic operations. The total implementation of the study model, though, would not be appropriate at this time due to the above discussed problems. There are, however, initiatives that can be taken to enhance clinic operations. They are:

1. Using comments from this study, initiate a request to Health Services Command to investigate the provision of a list of weights to be assigned to various categories of patient examinations to better reflect productivity involved, for example, a prescription refill should be weighted less than a full medical examination.

2. Develop a formalized Decentralized Patient Appointment System to alleviate clinician controlled "blue time" problems.

3. Pending completion of recommendation number two, provide management generated patient appointment schedule forms that the clinicians can use rather than using their desk calendars in making "blue time" patient appointments.

4. Require that clinician self-scheduled appointment forms be provided to the receptionist by the clinician the day prior to appointments so that patient records can be obtained, No-shows can be tracked, and the receptionists can know the clinicians schedule so as not to interrupt and to provide assistance based upon clinician needs.

5. Ensure that all incoming phone calls are routed through the receptionist. This will allow proper logging of calls (for clinic productivity credit) as well as avoid interrupting clinicians during the middle of patient examinations. Return phone calls should be placed for the clinicians by the receptionists whenever possible.

6. Receptionists should escort patients to treatment area. A chair should be placed outside each treatment area to allow for the ready access of the next patient to the clinician.

7. Two treatment rooms are needed by each clinician. A space utilization study should be undertaken to address this issue.

8. GLWACH should establish a policy providing parameters on the number or percentage of hours worked to be spent in direct versus non-direct health care activities.

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Provider Log/Diary (CONT)

Activities	Seeing OutPT	Seeing InPT	Phone Ref. Patient	Pt Record Entry	Wait for PT	MOD/ER Duties	Meetings	Professional Readings
1200-1210								
1210-1220								
1220-1230								
1230-1240								
1240-1250								
1250-1300								
1300-1310								
1310-1320								
1320-1330								
1330-1340								
1340-1350								
1350-1400								
1400-1410								
1410-1420								
1420-1430								
1430-1440								
1440-1450								
1450-1500								
1500-1510								
1510-1520								
1520-1530								
1530-1540								
1540-1550								
1550-1600								
1600-1610								
1610-1620								
1620-1630								
1630-1640								
1640-1650								
1650-1700								
1700-1710								
1710-1720								
1720-1730								
1730-1740								
1740-1750								
1750-1800								

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Wait for PT	MOD/ER Duties	Meetings	Professional Readings	Military Duties	Intransit in Hosp	Personal Business (Lunch Inc)	Other (Specify)

Provider Log/Diary

Name		Date

Place checkmark in the appropriate block. If check more than one box during same time per
in each endeavor.

Activities	Seeing OutPT	Seeing InPT	Phone Ref. Patient	Pt Record Entry	Wait for PT	MOD/ER Duties	Meetings	Professional Readings
0700-0710								
0710-0720								
0720-0730								
0730-0740								
0740-0750								
0750-0800								
0800-0810								
0810-0820								
0820-0830								
0830-0840								
0840-0850								
0850-0900								
0900-0910								
0910-0920								
0920-0930								
0930-0940								
0940-0950								
0950-1000								
1000-1010								
1010-1020								
1020-1030								
1030-1040								
1040-1050								
1050-1100								
1100-1110								
1110-1120								
1120-1130								
1130-1140								
1140-1150								
1150-1200								

Note: PT stands for Patient.

Date _____

te than one box during same time period, please make note as to approximate time

ıit br	MOD/ER Duties	Meetings	Professional Readings	Military Duties	Intransit in Hosp	Personal Business (Lunch Inc)	Other (Specify)

APPENDIX B

Questionnaire For Patient Related Factors

Patient Information

Date _____

Patient's Name _____

Time Patient arrived in provider's office _____

Time Patient departed from provider's office _____

New Patient _____

Return Patient _____

Age of Patient _____

Type of Disease Treated _____

Number of problems dealt

    with during visit _____

Number of Diagnostic

    Tests Ordered _____

Number of Therapeutic

    Procedures Conducted _____

APPENDIX C

Internal Medicine Health Care Provider Questionnaire Regarding
Productivity Factors.

(General results) _____NAME

1. Please list activities that you feel should be factored into a fair
measure of provider productivity in the outpatient setting.

a. Patient Related. (Answers) Time spent with each patient. New
Patient versus return patient. A new patient takes twice as long as a
follow-up but is counted the same. Numbers alone don't accurately reflect
time spent with a patient. Signing a script takes two minutes but is
counted the same as seeing a patient. A Chemo patient may take one hour
or more (especially if in-patient) but counts the same as a prescription
refill. In-house patients. Outpatient visits. Phone calls/counseling of
families of inpatients. Outpatient phone calls. Procedures performed and
interpretation of tests.

b. Professionally Related, for example, Continuing Education.
(Answers) Professional Staff Conference. Consultations for other
services. Continuing Education. Should have time to do this but I don't see
it happening.

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c. Unique Military Duties Related. (Answers)
Field Training. Physical Training (PT) and PT Test. Personnel Actions.
Staff meetings.

d. Others. (Answers)
Committee meetings. Review of Laboratory data. Arranging Air
Evacuations. Arranging/writing letters of referral.

2. In regard to non-patient care time.

a. How much compensatory time would you estimate that you earn
per week? (Answers) Normally 2 hours a day X 5 days. Occasionally 1
hour a day X 5 days. Often times 5 hours a week, other times none (this
comment from a Nurse Practitioner).

How much compensatory time would you estimate that you earn
per month? (Answers) 40-50 hours. 8 hours (Nurse Practitioner).

b. How much compensatory time would you estimate that you take
per week? (Answers) Occasionally. None.

How much compensatory time would you estimate that you take
per month? (Answers) Occasionally. None.

c How much sick leave/time would you estimate that you take per year? None. Less than 20 days.

d How much vacation/leave time are you able to take per year? (Answers) 15-20 days. 30 days.

3 Please list, in order of estimated frequency seen, the ten most common patient conditions that present to you. (Answers) (a) Arteriosclerotic Heart Disease (ASHD), Heart valve disease; Chronic Obstructive Pulmonary Disease (COPD), Diabetes Mellitus (DM), Hypertension (HTN); Arterio Sclerotic Peripheral Vascular Disease (ASPVD) & other neurology disease, Oncological, Rheumatology, Gastroenterology; Renal Disease. (b) Hypertension, Diabetes; Vertigo; Palpitations, Chest Pains; Abdominal Pain, Impotence; Angina; Shortness of Breath (COPD); Bronchitis. (c) (Nurse Practitioners) HTN; Type II DM, Osteoarthritis; Hypothroidism, GI problems, Headaches, Anemia, Urinary Tract Infections (UTi's), Chemotherapy, HIV (AIDS) clinic.

4 Other Factors. (Answers) None.

APPENDIX D

Example of use of Productivity Measurement tool for one clinician for one day's work

Formula   Actual   Number of visits of   Clinicians AVG
            Units/Hour =   Particular Diagnosis of PT X   Units to treat PT
                                       Hours in Particular Work Session

                                                                  USC or Estimated
            Predicted   Number of visits of   Mean Mins to treat
            Units/Hours =   Particular Diagnosis of PT x   a Particular
                                                                  Diagnosis of PT

                             _____

                                       Hours in Particular Work Session

Given 7 appointments as follows, all return patients, for 8 hours day

        1 PT with Hypertension, 1 Chronic Heart Disease, 1 Diabetes
Mellitus, 1 overweight, 1 Chronic Heart Disease (a second patient), 1
Diabetes Mellitus (a 2nd patient), 1 Medical Evaluation.

*Plus 2 hours (12 units) on inpatient care, 2 on Patient Charts, 4
consulting with colleages; 1 hour working on administration papers, and
1.5 hours attending two different meetings.

a

Actual $\frac{1 X 1.5 Units}{8 hours}$ = 1675   Predicted $\frac{1 X 1.39}{8}$ = 173
Units   Units

        $\frac{1 X 1.5}{8}$ = .1875 $\frac{1 X 1.41}{8}$ = 176

$$\frac{1 \times 2}{8} = .25 \qquad \frac{1 \times 1.44}{8} = .180$$

$$\frac{1 \times 1}{8} = .125 \qquad \frac{1 \times 1}{8} = .125$$

$$\frac{1 \times 2.5}{8} = .3125 \qquad \frac{1 \times 1.5}{8} = .188$$

$$\frac{1 \times 2}{8} = .25 \qquad \frac{1 \times 1.41}{8} = .176$$

$$\frac{1 \times 1.5}{8} = .1875 \qquad \frac{1 \times 1.44}{8} = .180$$

| TOTALS | 1.499 Units/Hour | 1.1975 |

```
Plus   12 Inpatient Units        12/8  = 1.5
        2 Pt Record Entries       2/8  = .25
        4 Counseling              4/8  = .5
        6 Admin Paperwork         6/8  = .75
        9 Meetings                9/8  = 1.125
                                          4.125
```

GRAND TOTAL.   1.499 + 4.125 = 5.624

* Mean Minutes Time for these areas were not in USC Study and were estimated based upon input from Internal Medicine Clinicians. Estimated times include   5 minutes (.5 Units) – Phone Call
2 minutes (.2 Units) – Prescription rewrite

40 minutes (4 Units) – Chemotherapy Treatment (Nurse)

20 minutes (2 Units) – Chemo (Physician Participation)

20 minutes (2 Units) – Walk-In Patients

20 minutes (2 Units) – Consultations

45 minutes (4.5 Units)– Esophagia CA exam

10 minutes (1 Unit)   – Blood Pressure Check

10 minutes (1 Unit)   – TST

5 minutes (.5 Unit) – Flu Shot

9 minutes (.9 Unit)   – Bold Treatment for Rheumatoid Arth.

b

Productivity = <u>Patients Seen</u>
               Number of hours worked

7/8 = .875 patients per hour.

c   26.7% of time spent on inpatient coverage.
     46.7% of time spent on non-direct hands-on patient care.

APPENDIX E

Productivity Measurements

Clinician A	Predicted Units/Hour Based upon Types of Patients		Actual Units/Hour Based upon Types of Patients	
				(MEPRS Counted
Day		(Total Units Worked)		Visits)
a. (1)	1.92	(5.72)	2.46	(6)
(2)	2.08	(4.86)	2.25	(11)
(3)	1.56	(5.63)	1.78	(9)
(4)	1.44	(6.58)	2.29	(8)
(5)	.49	(5.95)	.49	(7)

b. Number of Patients Seen/Hours Worked

Day

(1) (a) .576 patients/hour when looking at regular
appointments only.
(1.32 pt/hr during concentrated appointment times.)

   (b) .692 when add in prescription rewrites, consults,
patient phone calls, et cetera, for the whole day
without weighting by units those activities.
(1.58 pt/hr during concentrated appointment times.)

(2) (a) .692 (1.31)   (4) (a) .94 (2.0)

   (b) 1.15 (2.61)   (b) 1.76 (2.91)

(3) (a) .44 (1.54)   (5) (a) .12 (1.0)

   (b) 1.0 (N/A)   (b) .73 (1.73)

	Percent Inpatient Care	Percent not in Hands-On Care
Day		
(1)	4	43
(2)	14.3	34.8
(3)	4.9	50.3
(4)	3.6	10.7
(5)	4.1	53.3

d. Daily survey of Clinician's work time for day

	1 Outpatient	2 InPT	3 Phone	4 Pt Records	5 Wait for Pt	6 ER Duties
Day (1)	55.1%	3.9%	N/A	6.4%	N/A	N/A
(2)	55.6%	12.5%	N/A	23.6%	N/A	N/A
(3)	46.2%	4.8%	N/A	10.6%	4% (1 No show)	N/A
(4)	78.7%	4.3%	N/A	N/A	4.3% (1 Tardy)	N/A
(5)	42.6%	4.1%	N/A	14.2%	N/A	N/A

	7 Meetings	8 Professional Readings	9 Military Duties	10 Intransit in Hosp	11 Personal Business	12 Other
Day (1)	N/A	30.7%	N/A	N/A	N/A	3.8%
(2)	N/A	6.3%	N/A	N/A	N/A	2%
(3)	N/A	30.8%	N/A	N/A	N/A	4%
(4)	N/A	4.3%	N/A	N/A	N/A	8.5%
(5)	6.2%	24.7%	N/A	N/A	N/A	6.2%

Clinician B	Predicted Units/Hour Based upon Types of Patients		Actual Units/Hour Based upon Types of Patients	
				(HEPRS Counted
Day		(Total Units Worked)		Visits)
a (1)	2.16	(5.60)	2.00	(11)
(2)	1.61	(6.99)	3.34	(25)
(3)	1.20	(5.62)	1.50	(7)
(4)	.26	(6.00)	.19	(5)
(5) Clinician unavailable				

b Number of Patients Seen/Hour Worked

Day
(1) (a) .9 (2.5)   (b) 1.3
(2) (a) .64 (1.85)   (b) 2.76
(3) (a) .88 (3.04)   (b) N/A
(4) (a) .19 (1.00)   (b) .75

c Percent Inpatient Care   Percent not in Hands-On Care

Day	Percent Inpatient Care	Percent not in Hands-On Care
(1)	10.7%	50%
(2)	15.2%	13.6%
(3)	26.7%	46.7%
(4)	56.3%	18.7%

a. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	41%	10.7%	6.6%	7%	N/A	N/A
(2)	Not completed					
(3)	Not completed					
(4)	20%	60%	20%	N/A	N/A	N/A

	7	8	9	10	11	12
Day (1)	5.2%	10.4%	N/A	N/A	N/A	19.6%
(2)	Not completed					
(3)	Not Completed					
(4)	N/A	N/A	N/A	N/A	N/A	N/A

Clinician C		Predicted Units/Hour Based Upon Types of Patients		Actual Units/Hour Based Upon Types of Patients	
(Clinic Chief)	Day		(Total Units Worked)	(MEPRS Counted	Visits)
a	(1)	No Outpatients	(5.98)		
	(2)	.61	(5.43)	.61	(9)
	(3)	52	(6.01)	.30	(15)
	(4)	73	(6.74)	1.11	(17)
	(5)	2.73	(7.04)	4.00	(12)

b. Number of Outpatients Seen/Hours Worked

Day
(1) None
(2) (a) .27 (2.66) (b) 1.36 (5.00)

(3) (a) 14 (478) (b) 1.76 (1500)

(4) (a) 42 (231) (b) 2.09 (862)

(5) (a) 120 (143) (b) 4.40 (429)

Percent Inpatient Care	Percent not in Hands-On Care
Day	
(1) 12.6%	77.6%
(2) 45.1%	35.2%
(3) 16.6%	66.4%
(4) 20.7%	53.7%
(5) None	35.3%

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	N/A	22.6%	N/A	N/A	N/A	N/A
(2)	27.3%	43.2%	N/A	N/A	N/A	N/A
(3)	13.6%	22.6%	N/A	N/A	6.8%	N/A
(4)	20%	25%	N/A	N/A	N/A	N/A
(5)	64.7%	N/A	N/A	N/A	N/A	N/A

	7	8	9	10	11	12
Day (1)	39.6%	1.9%	20.6%	1.9%	N/A	13.2%
(2)	25%	N/A	N/A	N/A	N/A	45%
(3)	N/A	N/A	N/A	2.3%	N/A	54.6%
(4)	N/A	N/A	30%	N/A	N/A	25%
(5)	11.6%	N/A	N/A	N/A	N/A	23.5%

Clinician D	Predicted Units/Hour Based Upon Types of Patients		Actual Units/Hour Based Upon Types of Patients	
	Day		(Total Units Worked)	(MEPRS Counted Visits)
a	(1) 2.28		(5.412) 2.348	(14)

b. Number of Patients Seen/Hours Worked

Day
(1) (a) 1.06 (2.15)
    (b) 1.68 (3.48)

c. Percent Inpatient Care   Percent not in Hands-On Care

Day (1)   5.4%   21.4%

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	52.4%	4.8%	23.7%	12.2%	N/A	N/A

	7	8	9	10	11	12
	5.8%	N/A	N/A	.9%	N/A	N/A

APPENDIX E
(Continued)

Clinician E	Predicted Units/Hour Based upon Types of Patients	Actual Units/Hour Based upon Types of Patients

	Day		(Total Units Worked)		(MEPRS Counted Visits)
a.	(1)	1.27	(5.31)	.93	(31)

b. Number of Patients Seen/Hours Worked

Day
(1) (a) 77 (4.14) (b) 2.65 (7.75)

c. <u>Percent Inpatient Care</u>   <u>Percent not in Hands-On Care</u>

Day (1)   13.5%   (Plus 24.2% in E.R.)   23.3%

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	48.9%	11.1%	3.5%	9.7%	N/A	20%

	7	8	9	10	11	12
	N/A	N/A	N/A	N/A	1.0%	6.0%

Clinician F	Predicted Units/Hour Based upon Types of Patients	Actual Units/Hour Based upon Types of Patients

	Day		(Total Units Worked)		(MEPRS Counted Visited)
a.	(1)	4.72	(8.38)	4.18	(14)

(2)	2.44	(6.56)	2.07	(28)
(3)	65	(6.28)	65	(7)

b. Number of Patients Seen/Hours Worked

Day (1) (a) 2.7   (b) N/A
    (2) (a) 1.29   (b) 3.29
    (3) (a) .22 (2.0)   (b) .76   (3.22)

c. <u>Percent Inpatient Care</u>   <u>Percent not in Hands-On Care</u>

Day		
(1)	9.5	7.2
(2)	21.6	12.8
(3)	44	35.1

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	76.7%	13.3%	8.3%	1.7%	N/A	N/A
(2)	42.7%	21.6%	13.7%	14.0%	N/A	7.8%
(3)	20%	44.3%	3.6%	4.8%	N/A	14.5%

	7	8	9	10	11	12
Day (1)	N/A	N/A	N/A	N/A	N/A	N/A
(2)	N/A	N/A	N/A	N/A	N/A	N/A
(3)	N/A	N/A	N/A	N/A	N/A	12.7%

Clinician G*	Predicted Units/Hour Based upon Types of Patients		Actual Units/Hour Based upon Types of Patients	
				(MEPRS Counted
Day		(Total Units Worked)		Visits)
a (1)	1.05	(5.45)	1.61	(18)
(2)	1.05	(7.38)	1.99	(17)
(3)	.61	(6.27)	.71	(24)
(4)	.35	(5.63)	.56	(4)
(5)	.12	(5.99)	.69	(10)

b. Number of Patients Seen/Hours Worked

Day
(1) (a) .69 (4.72) (b) 1.96 (5.92)
(2) (a) .63 (2.61) (b) 1.79 (5.15)
(3) (a) .33 (2.00) (b) 2.07 (6.33)
(4) (a) .25 (2.67) (b) N/A
(5) (a) .12 (1.0) (b) 1.04 (1.7)

c. Percent Inpatient Care	Percent not in Hands-On Care
Day	
(1)	23.3	23.3
(2)	7.1	44.2
(3)	12.2	51.3
(4)	N/A	90.0
(5)	2.65	44.2

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	42.3%	21.7%	7.8%	1.9%	N/A	N/A
(2)	34.5%	8.6%	1.7%	N/A	N/A	N/A
(3)	31.6%	12.3%	N/A	5.2%	N/A	N/A
(4)	10.0%	N/A	N/A	25%	N/A	N/A
(5)	57.1%	N/A	N/A	3.6%	N/A	N/A

	7	8	9	10	11	12
Day (1)	N/A	N/A	N/A	N/A	7.8%	16.5%
(2)	N/A	N/A	10%	N/A	3.4%	41.7%
(3)	N/A	.9%	N/A	N/A	5.3%	44/8%
(4)	N/A	20%	N/A	N/A	N/A	45%
(5)	N/A	N/A	N/A	1.8%	5.4%	32.1%

Clinician H*		Predicted Units/Hour Based upon Types of Patients	Actual Units/Hour Based upon Types of Patients	
	Day	(Total Units Worked)		(MEPRS Counted Visits)
a.	(1) 3.94	(6.08)	5.30	(12)
	(2) 2.12	(5.38)	2.63	(5)
	(3) 2.02	(5.28)	2.58	(13)
	(4) 2.69	(5.25)	3.35	(16)
	(5) 1.44	(6.04)	2.19	(16)

b. Number of Patients Seen/Hours Worked.

Day
(1) (a) 1.94 (2.06)   (b) N/A
(2) (a) 1.00 (2.29)   (b) N/A
(3) (a) .72 (1.47)   (b) 1.32   (2.54)
(4) (a) 1.13 (1.64)   (b) 1.81   (2.53)
(5) (a) .81 (2.00)   (b) 1.73   (3.60)

c. Percent Inpatient Care   Percent not in Hands-On Care

Day	Percent Inpatient Care	Percent not in Hands-On Care
(1)	N/A	24.2
(2)	N/A	51.1
(3)	N/A	38.6
(4)	N/A	32.4
(5)	N/A	54.5

d. Daily Survey of Clinician's work time for day.

	1	2	3	4	5	6
Day (1)	62.5%	N/A	10.7%	3.6%	N/A	N/A
(2)	59.1%	N/A	4.5%	N/A	N/A	N/A
(3)	48.1%	N/A	3.7%	N/A	N/A	N/A
(4)	65.5%	N/A	3.6%	1.8%	N/A	N/A
(5)	41.5%	N/A	3.8%	1.9%	3.8%	N/A

	7	8	9	10	11	12
Day (1)	7.1%	1.8%	N/A	N/A	3.6%	10.7%
(2)	N/A	N/A	N/A	N/A	N/A	36.0%
(3)	N/A	16.7%	3.7%	N/A	9.3%	18.5%
(4)	N/A	5.5%	N/A	N/A	3.6%	20.0%
(5)	34%	3.8%	N/A	N/A	3.8%	7.5%

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*   Adult Nurse Practitioners (The USC numbers were used for comparison purposes due to lack of any other resources. In a future study, numbers as to mean minutes expected to take to treat various categories of patients would need to be developed for Nurse Practitioners.)

USC Internal Medicine Practice Study Report Excerpt

TABLE 3.10

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS[1]

NON-HOSPITAL CARE: FIRST ENCOUNTERS

(BASED ON 2970 ENCOUNTERS)

PRIMARY PROBLEM / DIAGNOSES (RANK, DIAGS DESCRIPTION)	TOTAL DIAGNOSES WEIGHTED	REL % OF ALL DIAGNOSES	CUM % OF ALL DIAGNOSES	MEAN MINS PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
16 692 Other Eczema and Dermatitis	453.3	1.0	45.7	11.4	85.00	43.9	31.4	34.0
17 427 Symptomatic Heart Disease	445.2	1.0	46.7	37.6	279.61	45.5	56.4	65.0
18 79* Headache	427.8	0.9	47.6	30.5	217.17	46.0	34.3	34.2
19 305 Physical Disorders of Presumably Psychogenic Origin	422.1	0.9	40.5	36.4	235.70	40.2	32.8	31.0
20 303 Alcoholism	421.7	0.9	49.4	34.4	241.84	49.0	49.6	73.6
21 597 Other Diseases of Urinary Tract	411.0	0.9	50.3	18.4	126.03	50.3	29.0	19.3
22 79 Other Viral Diseases	406.2	0.9	51.2	15.3	103.26	50.9	32.7	55.7
23 501 Chronic Sinusitis	401.4	0.9	52.0	15.2	101.72	51.5	37.0	29.2
24 71* Osteoarthritis and Allied Conditions	397.1	0.9	52.9	34.4	227.78	52.6	65.0	33.7
25 486 Pneumonia, Unspecified	386.9	0.8	53.7	24.0	154.68	53.7	39.4	72.6
26 30* Otitis Media Without Mention of Mastoiditis	301.1	0.8	54.5	13.0	82.47	54.1	17.7	47.0
27 700 Certain Symptoms Referable to Nervous System and Special Senses	370.4	0.8	55.3	10.2	114.69	54.8	51.1	19.4
28 787 Symptoms Referable to Limbs and Joints	369.6	0.8	56.1	20.8	120.31	55.5	40.1	61.4
29 847 Sprains and Strains of Other and Unspecified Parts of Back	340.3	0.7	56.9	20.3	117.66	56.2	37.3	60.1
30 9 Diarrheal Disease	343.6	0.7	57.6	17.0	97.73	56.7	39.3	44.0

[1]Data were collected over two 3-day recording periods, Monday through Wednesday and Thursday through Saturday. Data represent one typical day, excluding Sunday.

TABLE 3.10
GENERAL INTERNAL MEDICINE
THIRTY LEADING PRIMARY PROBLEMS[1]

NON-HOSPITAL CARE: FIRST ENCOUNTERS
(BASED ON 2970 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (DAYS DIAGNOSED)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
1 Y 0 Medical or Special Examination	4534.2	9.7	9.7	27.0	2097.96	11.9	35.8	55.3
2 465 Acute Upper Respiratory Infection of Multiple or Unspecified Sites	3602.1	7.7	17.5	10.6	636.76	15.6	27.7	53.2
3 401 Essential Benign Hypertension	1780.0	3.8	21.3	20.6	649.03	20.4	53.0	53.4
4 470 Influenza, Unqualified	1610.5	3.5	24.0	14.3	304.31	22.6	30.5	40.2
5 250 Diabetes Mellitus	1399.9	3.0	27.0	27.9	650.26	26.3	49.9	29.0
6 462 Acute Pharyngitis	1264.0	2.7	30.5	10.4	210.41	27.5	26.8	47.5
7 783 Symptoms Referable to Respiratory System	970.6	2.1	32.6	26.6	436.60	30.0	40.8	56.4
8 300 Neuroses	935.4	2.0	34.6	33.7	525.50	33.0	37.5	16.3
9 412 Chronic Ischemic Heart Disease	856.1	1.8	36.4	32.1	446.98	35.6	64.2	47.0
10 277 Obesity not Specified as of Endocrine Origin	745.0	1.6	1.0	32.5	403.51	37.9	37.2	26.5
11 465 Acute Bronchitis and Bronchiolitis	703.4	1.5	.5	14.2	166.62	30.0	30.6	34.9
12 785 Symptoms Referable to Abdomen and Lower Gastrointestinal Tract	609.0	1.4	41.0	29.0	311.69	40.6	37.7	21.0
13 493 Asthma	625.3	1.3	42.3	17.7	104.95	41.6	39.2	28.7
14 490 Bronchitis, Unqualified	502.9	1.3	43.6	13.3	120.74	42.4	35.7	34.0
15 728 Vertebromenic Pain Syndrome	543.6	1.2	44.7	20.6	186.78	43.4	35.2	66.0

TABLE 3.15

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS

HOSPITAL CARE: PRINCIPAL ENCOUNTERS

(BASED ON 6160 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (RANK ORDERED)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % OF TOTAL TIME	MEAN PAT. AGE	SEX % MALE
1 410 Acute Myocardial Infarction	5959.9	6.7	6.7	17.6	1745.07	8.5	63.3	72.7
2 412 Chronic Ischemic Heart Disease	5441.6	6.1	12.8	14.1	1279.10	14.7	60.7	50.7
3 427 Symptomatic Heart Disease	4430.0	5.0	17.8	16.7	1232.64	20.7	69.0	51.1
4 486 Pneumonia, Unspecified	3121.4	3.5	21.2	12.4	647.08	23.9	65.5	49.4
5 250 Diabetes Mellitus	3014.9	3.4	24.6	14.4	723.07	27.4	62.2	24.4
6 436 Acute but Ill-Defined Cerebrovascular Disease	2933.3	3.3	27.9	13.2	645.76	30.6	69.4	57.3
7 492 Emphysema	2847.8	3.2	31.1	12.6	600.06	33.5	68.1	75.0
8 174 Malignant Neoplasm of Breast	1685.0	1.9	33.0	10.5	296.22	34.9	53.8	6.2
9 153 Malignant Neoplasm of Large Intestine, Except Rectum	1596.4	1.8	34.0	11.5	305.52	36.4	67.3	52.3
10 820 Fracture of Neck of Femur	1425.3	1.6	36.4	8.7	205.91	37.4	72.7	2.6
11 162 Malignant Neoplasm of Trachea, Bronchus and Lung	1342.5	1.5	37.9	11.9	267.07	38.7	63.2	77.7
12 450 Pulmonary Embolism and Infarction	1122.0	1.3	39.1	13.0	243.97	39.9	60.7	27.3
13 401 Essential Benign Hypertension	1079.7	1.2	40.4	13.9	250.59	41.1	57.9	36.6
14 571 Cirrhosis of Liver	1000.3	1.1	41.5	12.3	206.46	42.1	52.1	44.5
15 733 Other Diseases of Muscles, Tendon and Fascia	908.3	1.0	42.5	20.6	312.22	43.7	47.6	41.4

TABLE 3.15

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS[1]

HOSPITAL CARE: PRINCIPAL ENCOUNTERS

(BASED ON 6160 ENCOUNTERS)

PRIMARY PROBLEM / DIAGNOSIS (USA/ICDA CODE)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
16 569 Other Diseases of Intestines and Peritoneum	906.3	1.0	43.5	16.5	279.62	45.0	50.9	33.6
17 490 Bronchitis, Unqualified	839.7	0.9	44.5	10.6	140.71	45.8	67.4	30.2
18 300 Neuroses	834.9	0.9	45.4	12.9	179.86	46.6	49.9	23.4
19 782 Symptoms Referable to Cardiovascular and Lymphatic System	831.5	0.9	46.3	15.0	208.02	47.6	50.3	27.1
20 713 Osteoarthritis and Allied Conditions	770.9	0.9	47.2	12.9	167.40	48.5	73.0	37.9
21 433 Cerebral Thrombosis	767.4	0.9	48.1	15.1	192.51	49.4	74.4	42.5
22 303 Alcoholism	742.1	0.8	48.9	8.6	106.58	49.9	44.6	72.6
23 532 Ulcer of Duodenum	721.0	0.8	49.7	16.9	203.58	50.9	55.3	73.4
24 725 Displacement of Intervertebral Disc	706.2	0.8	50.5	11.1	130.01	51.5	51.6	41.4
25 466 Acute Bronchitis and Bronchiolitis	670.1	0.8	51.2	13.2	147.66	52.3	62.6	53.2
26 201 Hodgkin's Disease	660.0	0.7	52.0	5.2	57.34	52.5	24.8	01.9
27 574 Cholelithiasis	664.0	0.7	52.7	9.7	106.07	53.1	57.6	31.6
28 785 Symptoms Referable to Abdomen and Lower Gastrointestinal Tract	635.2	0.7	53.4	12.2	129.51	51.7	55.1	29.7
29 562 Diverticula of Intestine	635.0	0.7	54.2	12.3	130.44	54.3	70.9	38.6
30 575 Cholecystitis and Cholangitis, Without Mention of Calculus	620.6	0.7	54.9	11.3	116.62	54.9	60.7	16.7

[1]Data were collected over two 3-day recording periods, Monday through Wednesday and Thursday through Saturday. Data represent one typical day, excluding Sunday.

TABLE 3.9

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS[1]

ALL HOSPITAL CARE

(BASED ON 12087 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (ICD9S DIAGNOSIS)	TOTAL DIAGNOSES WEIGHTED	PCT. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
1 410 Acute Myocardial Infarction	14190.4	7.3	7.3	17.3	4093.05	7.8	62.4	67.0
2 412 Chronic Ischemic Heart Disease	11552.2	5.9	13.3	18.9	3633.46	14.7	66.2	57.6
3 427 Symptomatic Heart Disease	9905.9	5.1	18.4	18.0	2963.53	20.3	67.8	53.5
4 486 Pneumonia, Unspecified	7611.0	3.0	22.2	18.2	2244.78	24.5	64.3	59.6
5 250 Diabetes Mellitus	5005.1	3.0	25.2	16.6	1608.59	27.6	58.4	32.3
6 492 Emphysema	5264.3	2.7	27.9	13.2	1157.00	29.8	67.4	73.5
7 436 Acute but Ill-Defined Cerebrovascular Disease	5069.6	2.6	30.5	16.9	1430.93	32.5	71.4	59.2
8 174 Malignant Neoplasm of Breast	2874.7	1.5	32.0	12.6	611.26	33.7	55.4	4.8
9 820 Fracture of Neck of Femur	2863.1	1.5	33.4	12.7	605.62	34.8	76.2	8.1
10 153 Malignant Neoplasm of Large Intestine except Rectum	2590.1	1.3	34.0	14.0	604.39	36.0	67.5	56.7
11 162 Malignant Neoplasm of Trachea, Bronchus and Lung	2577.0	1.3	36.1	17.2	736.01	37.4	61.3	67.1
12 401 Essential Benign Hypertension	2492.9	1.3	37.4	20.2	835.09	39.0	55.6	44.0
13 450 Pulmonary Embolism and Infarction	2146.8	1.1	38.5	17.7	631.59	40.2	50.2	25.5
14 569 Other Diseases of Intestines and Peritoneum	2065.1	1.1	39.6	17.9	616.95	41.3	61.2	47.3
15 571 Cirrhosis of Liver	2055.9	1.1	40.6	13.0	473.06	42.2	46.7	61.5

TABLE 1.9

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS[1]

ALL HOSPITAL CARE

(BASED ON 12007 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (8TH5 CODE NO.)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL MINUTES WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
16 303 Alcoholism	1943.4	1.0	41.6	11.4	365.01	42.9	46.8	71.6
17 781 Symptoms Referable to Respiratory System	1899.4	1.0	42.6	20.2	640.65	44.1	52.3	50.7
18 300 Neuroses	1859.6	1.0	43.6	13.6	420.76	44.9	48.6	25.2
19 713 Osteoarthritis and Allied Conditions	1819.0	0.9	44.5	13.5	409.42	45.7	64.9	20.8
20 785 Symptoms Referable to Abdomen and Lower Gastrointestinal Tract	1654.4	0.9	45.4	14.0	406.47	46.5	55.4	44.1
21 574 Cholelithiasis	1527.0	0.8	46.1	10.3	261.13	47.0	55.4	25.8
22 413 Angina Pectoris	1502.6	0.8	46.9	17.0	424.04	47.0	61.3	59.6
23 433 Cerebral Thrombosis	1469.5	0.8	47.7	16.8	416.49	48.6	72.0	45.4
24 782 Symptoms Referable to Cardiovascular and Lymphatic System	1452.5	0.7	48.4	16.1	309.14	49.3	56.2	27.0
25 451 Phlebitis and Thrombophlebitis	1352.1	0.7	49.1	13.0	292.16	49.9	52.1	42.6
26 789 Other General Symptoms	1335.9	0.7	49.8	22.9	509.00	50.8	54.0	39.1
27 285 Other and Unspecified Anemias	1320.0	0.7	50.5	10.1	327.41	51.6	67.0	14.4
28 38 Septicemia	1296.7	0.7	51.2	16.9	365.59	52.3	63.1	56.4
29 577 Disease of Pancreas	1295.2	0.7	51.0	15.3	324.25	52.9	47.0	51.7
30 493 Asthma	1282.2	0.7	52.5	14.7	316.51	53.5	51.6	29.8

[1] Data were collected over two 3-day recording periods, Monday through Wednesday and Thursday through Saturday. Data represent one typical day, excluding Sunday.

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TABLE 3.11

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS

HOSPITAL CARE: FIRST ENCOUNTERS

(BASED ON 1001 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (RANK, DIAGNOSIS)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
1 4.0 Acute Myocardial Infarction	1130.7	6.6	6.6	26.0	493.53	7.8	64.0	69.6
2 4.2 Chronic Ischemic Heart Disease	1005.0	5.9	12.0	35.4	639.91	17.8	69.9	54.0
3 480 Pneumonia, Unspecified	901.1	5.2	16.0	10.0	201.01	22.2	55.6	50.3
4 427 Symptomatic Heart Disease	660.6	3.9	21.9	17.6	196.67	25.3	60.0	50.1
5 250 Diabetes Mellitus	590.8	3.4	25.3	20.7	203.76	28.5	53.9	46.0
6 436 Acute but Ill-Defined Cerebrovascular Disease	548.0	3.2	28.5	30.0	201.57	33.0	75.6	50.2
7 783 Symptoms Referable to Respiratory System	516.3	3.0	31.4	27.7	238.33	30.7	51.4	63.3
8 401 Essential Benign Hypertension	499.9	2.9	34.3	27.7	231.03	40.3	50.2	59.0
9 303 Alcoholism	450.1	2.6	37.0	10.8	143.53	42.6	41.0	66.1
10 492 Emphysema	371.0	2.1	39.1	17.7	109.51	44.?	71.0	91.1
11 433 Cerebral Thrombosis	325.2	1.9	41.0	24.5	159.99	46.8	71.1	01.7
12 174 Malignant Neoplasm of Breast	297.8	1.7	42.7	13.0	68.42	47.?	45.2	0.0
13 569 Other Diseases of Intestines and Peritoneum	202.3	1.6	44.3	30.5	143.43	50.1	61.0	73.1
14 300 Neurosis	254.3	1.5	46.0	11.7	49.67	50.9	54.0	45.0
15 413 Angina Pectoris	254.1	1.5	47.3	28.3	119.02	52.9	62.1	04.1

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TABLE 3.11

GENERAL INTERNAL MEDICINE

THIRTY LEADING PRIMARY PROBLEMS[1]

HOSPITAL CARE: FIRST ENCOUNTERS

(BASED ON 1001 ENCOUNTERS)

PRIMARY PROBLEM/ DIAGNOSIS (ICDA-8 CODES)	TOTAL DIAGNOSES WEIGHTED	REL. % OF ALL DIAGNOSES	CUM. % OF ALL DIAGNOSES	MEAN MIN. PER ENCOUNTER	TOTAL HOURS WEIGHTED	CUM. % FOR TOTAL TIME	MEAN PAT. AGE	SEX % MALE
16 577 Diseases of Pancreas	231.4	1.5	48.7	15.1	63.20	53.8	42.2	40.3
17 571 Cirrhosis of Liver	236.8	1.4	50.1	17.6	70.22	54.9	43.9	70.1
18 519 Other Diseases of Respiratory System	196.0	1.1	51.2	13.1	43.34	55.6	60.1	91.2
19 285 Other and Unspecified Anemias	179.9	1.0	52.3	20.5	61.50	56.6	65.4	19.3
20 493 Asthma	170.4	1.0	53.3	13.7	40.09	57.2	34.1	49.7
21 -- Pulmonary Tuberculosis	176.7	1.0	54.3	15.3	45.05	57.9	40.2	60.4
22 782 Symptoms Referable to Cardiovascular and Lymphatic System	163.0	0.9	55.3	20.4	55.87	58.8	40.6	38.6
23 780 Certain Symptoms Referable to Nervous System and Special Senses	153.9	0.9	56.2	11.6	29.70	59.2	57.2	63.1
24 303 Mental Disorders not Specified as Psychotic Assoc. With Physical Cond.	151.9	0.9	57.0	19.0	45.57	60.0	93.0	40.0
25 244 Myxedema	150.1	0.9	57.9	9.0	22.40	60.3	60.7	0.0
26 70 Infectious Hepatitis	147.7	0.9	58.0	26.4	64.93	61.3	22.7	76.4
27 788 Other General Symptoms	143.2	0.8	52.6	19.1	45.69	62.1	31.0	63.6
28 402 Hypertensive Heart Disease	139.4	0.8	60.4	15.0	34.95	62.6	60.3	25.0
29 451 Phlebitis and Thrombophlebitis	137.2	0.8	61.2	24.0	56.74	63.5	54.4	22.1
30 574 Cholelithiasis	135.3	0.8	62.0	11.8	26.50	63.9	54.1	21.0

[1] Data were collected over two 3-day recording periods, Monday through Wednesday and Thursday through Saturday. Data represent one typical day, excluding Sunday.

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